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28. OBSERVATIONS ON THE BIOLOGY AND HABITS OF *SYCANUS AFFINIS* REUT. (HEMIPTERA: REDUVIIDAE) AND ITS STATUS AS A PREDATOR

Sycanus affinis Reut. is a commonly occurring predator in Orissa and is found in fairly large numbers in coconut groves located in and around Bhubaneswar. The nymphs and adults of this species attack a large number of surface feeding lepidopterous larvae. So far nothing is known about the biology of this predator. However, Hoffman (1934)¹ has studied the life history of a closely related species, *Sycanus croceovittatus* Dohrn. An attempt was, therefore, made to investigate its life history and habits in order to assess its potentiality as an affective predator.

Laboratory cultures of *S. affinis* were maintained in insect cages. Ten pairs of one day old adult males and females were kept in each cage and these were supplied with full-grown larvae of *Corcyra cephalonica* S. The egg masses laid in cages were removed and kept in petri-

¹ HOFFMAN, W. E. (1934): The life-history and economic status of *Sycanus croceovittatus* Dohrn. (Hemiptera: Reduviidae). *Lengran Sci. J.* 13(3):503-515.

dishes having a lining of filter paper. The date of egg laying was recorded. Ten nymphs, just after hatching, were transferred to a glass rearing jar of 15×10 cm size. The open end of the jar was covered with muslin cloth and held in position by rubber bands. Observations on the life history, feeding habits, host preference, preying potentialities of the different nymphal and adult stages were recorded. Five sets of such experiments were carried out in the laboratory. Three extra nymphs were reared in each set to serve as substitutes, the records of which were used in the event of unnatural death of any of the original ten nymphs. The laboratory temperature under which the biology of the predator was studied varied between 23.4 and 32.8°C .

Freshly emerged adult took 7 days to commence copulation. The egg mass contained a single layer of eggs arranged neatly in hexagonal shape. The female took about 3 minutes to lay each egg. The eggs were glued to the bottom with a sticky thread produced by the mother which soon dried up. An egg mass contained 24 to 152 eggs with an average of 100 eggs per cluster. The pre-oviposition period was 3 days and oviposition period varied from 6 to 37 days. The interval between two egg laying ranged from 5 to 10 days. The females were very prolific. A single female could produce a maximum of 807 eggs in confinement (Table 1).

The egg is brown, elongate, slightly bent in the middle, measures 2 mm in length, broad at the base (0.6 mm) and narrow at the top (0.4 mm). The anterior end has a white cap-like operculum. A black transverse line is present on the border between the operculum and the chorion. The chorion is smooth excepting the area lying beneath the black border line which contains a large number of punctuations. The incubation period varied from 14 to 24 days with 17.4 days on the average (Table 2). The per cent hatch ranged from 94.8 to 99.3. During eclosion the fully developed embryo pushed open the operculum. The nymphs took 30 to 40 minutes to extricate themselves from the chorion. Just after hatching, the nymphs sat upon the egg mass for about 10 minutes, stretched their legs, moved to the vicinity and remained congregated for some time.

There were five nymphal instars. Freshly moulted nymphs appeared light red. Their body coloration slowly changed from deep pink to black. The total body length from the clypeal end to the tip of the abdomen of the first, second, third, fourth and fifth instar nymphs was 3 mm, 5 mm, 7 mm, 11 mm and 18 mm respectively. The maximum body width of the nymphs was recorded at the third abdominal tergite. In all the nymphal instars there were three cone-shaped raised structures in the second, third and fourth abdominal tergites on the mid-dorsal line. Excepting the first nymphal instar, the rest of the instars contained four continuous, longitudinal white streaks, two lateral and two sub-

ventral, on the abdominal sternites.

The development period of the different nymphal instars and the total duration of life cycle are presented in Table 2. The table shows that the duration of the fifth nymphal instar is the longest (44.5 days) in April-May (Temp. Min. 28.8°C, Max. 35.5°C, Average 31.4°C and 69% R.H.) and the shortest (17.7 days) in June (Temp. Min. 28.8°C, Max. 35.5°C, Average 32.3°C and 75% R.H.). Egg masses laid during the first fortnight of December completed the life cycle in 152.4 days whereas those laid in the first fortnight of March needed only 81.7 days for completing development. The preimaginal mortality was mostly observed among the fifth instar nymphs. Under conditions of crowding and food scarcity cannibalism was observed mainly during the time of moulting.

The adult is dark in colour. The labium is three segmented, the apical segment is the smallest and contains a few sensory hairs at the tip. The mandibular and maxillary stylets are strong. The former contains backward projecting barbs. The triangular scutellum contains in the centre a rosethorn-shaped spine projecting anteriorly. In the hemelytron, basal region of the corium and clavus of the coreaceous area are black whereas the apical halves contain a light yellow patch. The abdomen is boat-shaped containing 7 tergites and 6 sternites in the male while there are 8 tergites and 6 sternites in female. The total length of the female is 24 mm and that of the male 23 mm. In the female the tip of the abdomen is pointed whereas in male it is blunt. There is a preponderance of males, the male and female ratio being 5.5:4:5.

The adults are very long-lived and hardy. They could withstand extremes of temperature ranging from 15°C to 40°C. Under average laboratory temperature of 30.0°C the males lived longer (85.1 days) than the females (69.3 days). At 15.0°C the males lived for 16 days and females for 14 days whereas both males and females succumbed in two days at a constant temperature of 40°C. Adults lived without food for a period of 28.1 to 33.2 days in summer. Different nymphal instars lived for 8.6 to 41.2 days without food (Table 3) but the fourth nymphal instars survived for the maximum period.

The nymphs and adults are general predators. They were found to predate on a large number of larvae namely those of *Nephantis serinopa* M., *Sesamia inferens* W., *Prodenia litura* F., *Amsacta albistriga* W., *Acherontia styx* W., *Cirphis albistigma* M., *Papilio demoleus* L. and *Anomis sabulifera* G. Besides, nymphs of grasshoppers and cockroaches, white ants and aphids were also attacked. Larvae which were surface feeders were preferred most by nymphs and adults of the reduviid, those of the larvae which remained concealed e.g., in leaf galleries, leaf webbings, leaf case etc. were attacked by the adults only. Likewise, naked pupae and pupae in cocoons, were attacked by the

TABLE 1
FECUNDITY OF ADULT FEMALES OF *S. affinis* UNDER LABORATORY CONDITIONS
(AVERAGE OF FIVE INDIVIDUALS IN EACH TEST)

Period of observation		Duration		Interval between two consecutive egg layings	Number of egg masses laid per individual	Total number of eggs laid per individual	Hatch ability percentage
From	To	Pre-oviposition period	Oviposition period				
14-3-72	19-4-72	3	37	5-9	6	807	97.9
24-4-72	11-5-72	3	18	7-10	3	194	96.3
5-7-72	10-7-72	3	6	5	2	105	94.8

TABLE 2
 MEAN DURATION OF VARIOUS STAGES IN THE LIFE-CYCLE OF *Sycanus affinis* UNDER LABORATORY CONDITIONS
 (AVERAGE OF 10 INDIVIDUALS IN EACH TEST)

Test No.	Period of observation		Temp. in °C during the developmental period		Egg period	Duration (days)					Total duration of life cycle	Adult longevity (days)			
	From	To				Nymphal period						Male	Female		
			Min.	Max.		Average	I	II	III	IV				V	
1.	5-12-71	10-5-72	23.3	34.4	26.4	21	15.3	18.1	20.6	23.5	28.2	105.7	126.7	103.0	85.5
2.	13-12-71	16-6-72	23.3	35.5	29.8	24	17.8	18.0	22.1	26.0	44.5	128.4	152.4	88.6	72.5
3.	14-3-72	10-6-72	27.7	35.5	32.9	14	6.0	9.5	11.3	19.1	21.8	67.8	81.7	75.3	68.3
4.	19-3-72	3-7-72	27.7	35.5	32.0	14	10.0	10.4	17.8	18.5	20.3	77.0	91.0	84.2	70.0
5.	2-4-72	4-7-72	28.8	35.5	32.1	14	11.3	13.3	14.1	15.2	17.7	71.6	85.6	79.4	50.2
Mean						17.4	12.1	13.8	17.2	20.4	26.5	90.1	106.9	86.1	69.3
Range						14-24	5-26	7-27	11-27	12-30	15-56	52-163	64-187	75-103	50-85

adults. When the attack was made on the pupae in cocoons, the adult pierced its stylets from a distance as otherwise the claws often got entangled in the webbings of the cocoons. Larvæ and pupæ remaining in stems and fruits were not attacked. The females were more virulent than the males with regard to the attack of the host. More than one nymph and adult may attack simultaneously a single host. The nymphs were observed sucking the body content of the host for 3 to 4 hours at a stretch. And adult female could overpower a larva of sphinx moth which was 37.2 times as heavy as the predator itself.

From a study to ascertain the maximum number of larvae eaten per day per individual, it was observed that the first four nymphal instars utilized less than one full grown larva of *C. cephalonica*. Once their appetite was satisfied, the nymphs did not attack the larvae even though the latter were in close proximity. However, the fifth instar nymphs and the adults sucked up the larvae at the rate of 1 and 5 respectively per day.

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29. ON THE OCCURRENCE OF *HOMOEOCERUS TAPROBANENSIS* DIST. (HEMIPTERA: COREIDAE) FROM POONA WITH A NOTE ON THE SCUTELLAR LEVIGATE LINE

Distant (1902)¹ while describing the species *Homoeocerus taprobanensis* had observed the presence of a central levigate line on head, pronotum and scutellum with the remark that it was obsolete on head. While studying some specimens from Poona I observed that the central levigate line to be well marked and continuous from head to the apex of scutellum in eight specimens, but in four others it was faint and slightly interrupted in the middle, in the region of scutellum. *Homoeocerus taprobanensis* was originally described from Sri Lanka and there is no further report available regarding its distribution.

¹ DISTANT, W. L. (1902): The Fauna of British India, Rhynchota 1:365-366.